

Music Lessons: The Role of Music in Empathy Education for Physicians

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Abstract

In response to increasing physician burnout and deteriorating patient relationships, medical educators are increasingly adopting humanities approaches to better equip future physicians to cope with healthcare challenges. However, music has not been widely considered as a tool to reach this end. This work reviews the literature to explore how music can be used to nurture various skills related to empathy, which include listening to a patient narrative, engaging with the illness experience, and dealing with ambiguity. This study reviews the physiological evidence of connections between music and empathy and reviews evidence that suggests that listening to and performing music can train doctors to listen better, deal with the complexity of illness, and prioritize patient needs. The understanding brought by this exploration can be used to develop curricula that teach medical students about the importance of humanism in patient care. This could lead to better clinical outcomes, lower student distress levels, and increased patient satisfaction.

Key terms: humanities, music, medical education, medicine

Introduction

Medicine is, first and foremost, a human endeavor, despite recent technological advancements that have drastically changed the medical landscape. Physicians are often trained to view the human body as a well-oiled machine, and often take steps to distance themselves from the reality that they are treating an actual human being. Medicine, in recent years, seems to have lost its humanness.

These changes have prompted academic centers to design curricula that explore the human aspect of medicine. The medical humanities is a rapidly evolving field, which leverages the power of art forms such as literature, music, and the visual arts to empower doctors to engage in the human experience. Central to this human experience, is the ability to practice with empathy.

The importance of empathy has been widely recognized by medical schools across the nation. Empathetic doctors can do more for their patients, leading to greater trust, increased patient satisfaction and engagement, and better patient outcomes. Empathy has even been defined as a hallmark of professionalism by the American Association of Medical Colleges (The Medical School Objectives Writing Group, 1999). To foster empathetic values among medical trainees, educational institutions have often turned to the arts and humanities. The majority of programs approach empathy education from the visual and literary arts, but music remains largely unincorporated in a medical curriculum. Preliminary studies have shown that music training can teach valuable listening skills and can actually increase empathy levels among medical students (Newell & Hanes, 2003; Pirgon, 2015).

In this thesis, I argue that music could be a valuable tool for empathy education in medical school and explore the possible ways music can be integrated into an empathy education curriculum. This is done by (1) exploring the neuroscience of music and empathy and (2) explaining the humanist lessons that can be learned from listening to and performing music. Finally, this thesis addresses counterarguments and limitations of a curriculum that uses music to nurture empathy.

The Lung Cancer in Room 4—Dehumanization in Today’s Hospitals

We have all had experiences at the doctor’s office-- some of us have experienced the incessant poking and prodding of a physical exam or the mind-numbing boredom of the hospital waiting room. We often interact with doctors who are overworked and have little to no time for us, and sometimes leave the clinic feeling more hopeless or confused than when we entered.

Unfortunately, this is a shared reality among many patients in the United States, especially those experiencing acute or chronic illness. In his book, “Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again”, physician and researcher Eric Topol explains that healthcare has become one of the biggest economic machines in the United States over the past forty years (Topol, 2019). The promise of large economic returns, Topol warns, has forced physicians to squeeze more patients into their practice to maximize productivity and profit, often ignoring the needs of a patient. Even in my own experiences with medicine, I have seen clinicians refer to a patient as “the lung cancer in room 14”. I have seen doctors silently replace catheters with a cold, calculated “hello” and have watched distressed doctors walk away from crying patients. It appears the current state of care employs physicians more as technicians than as healers.

The dehumanization present in the hospitals of today has been the subject of numerous commentaries, such as the satire “The House of God”, penned by Samuel Shem in the 1970s (Shem, 1978). Even today’s hospitals and clinics employ dehumanizing practices, and many structural and non-structural factors are important in understanding how the current state of care promotes dehumanization. Harvard psychologist Omar Haque and Northwestern psychologist Adam Waytz define dehumanization as “the denial of a distinctively human mind to another person” (p.177), highlighting several aspects of the clinic that promote this outcome. First, the nature of being ill itself contributes the dehumanization. Illnesses, especially those that are chronic or acute, “by necessity [produce] a diminution in a patient’s ability to plan, intend, or act (p.178)” (Haque & Waytz, 2012). The illness experience itself prevents patients from engaging with the world in the way they would normally, contributing to feelings of being less than human.

Furthermore, deindividuating practices such as the anonymity of patient experiences and the diffusion of responsibility for a patient among healthcare professionals lead to dehumanization. Since the medical profession often requires a cognitive approach to understanding physiological symptoms, deindividuation is often accompanied by mechanization, an approach that reduces a patient to organs and systems to improve ease of diagnosis (Haque & Waytz, 2012). While the mechanization of symptoms often aids doctors in providing a diagnosis, it can often cause patients to feel denied of their humanity.

Of course, practices such as deindividuation and mechanization serve important roles in guarding patient privacy, and removing these procedures can do more harm than good. Haque and Waytz (2012) suggest two mechanisms of dehumanization that can be controlled—empathy reduction and dissimilarity of experience. Empathy begins to decline in the third year of

medical school, just as a training physician begins to see patients (Hojat et al., 2009). The view of a patient as a member of an “outgroup” can exacerbate this decline in empathy, leading to reduced quality of care, according to Haque and Waytz. They suggest, however, that humanizing practices can actively combat this decline. While it is potentially harmful to dismantle some structural factors that contribute to dehumanization in medical care, empathic practice could reverse some of the negative effects of patient dehumanization. Thus, empathy education shows significant promise as a tool to enable physicians to provide more personal care.

A Working Definition of Empathy and Empathic Practice

In order to explore empathy and empathy education, a definition of empathy and empathic practice must be reached. Imagine for a moment the following scenario: a cancer patient has recently been diagnosed with a rare, terminal cancer. The doctor walks in and sits down to face the patient at eye level. The physician does not tower over the patient, who begins explaining their symptoms. While listening to the patient narrative, the physician chooses not to take notes and faces the patient, keenly observing the patient’s verbal and non-verbal cues. While thinking about a diagnosis, the physician chooses to pay attention to the patient’s non-medical needs. The physician acts only after assuming the patient’s perspective, thinking for a moment about what the physician would want to hear or know if they found themselves in the patient’s situation. In delivering bad news, the physician is nimble in action, knowing when to provide personal space for the patient and when to engage emotionally. The physician leaves the patient room with a clear idea of the patient’s needs as a whole and uses this knowledge to guide further clinical practice. From the patient’s perspective, these actions were the work of an empathic physician, one who was moved by the patient’s experience. While there is disagreement on the exact manifestations of clinical empathy, it is widely regarded as a vital component of medical

education. The American Association of Medical Colleges and the Accreditation Council for Graduate Medical Education have deemed the development of empathy a central focus of a medical school curriculum (as cited by Sulzer, Feinstein, & Wendland, 2016).

Despite its proclaimed importance in medical education and care, empathy and empathic practice are often misunderstood in the medical community. Halpern (2003) points out that many medical educators adopt a definition of empathy that emphasizes detachment over “emotional attunement”. Many physicians, Halpern argues, “strive to view patients’ emotions objectively” (p.670). This model, termed “detached concern”, supposes that knowing a patient’s emotional state is the same as knowing how a patient feels. For example, a physician practicing detached concern might understand that a pregnant rape victim would feel distressed during labor but would not take the patient’s perspective while making clinical decisions. Without this insight, the physician might proceed with the delivery as normal, without having a social worker speak to the patient or considering performing the delivery with fewer physical restraints. In this example, the physician practicing detached concern understands the basic emotion, but does not share that emotional experience, thus causing the physician to miss important opportunities to provide sensitive care.

While often conflated, empathy is not the same as detached concern. According to Halpern, the role of empathy “is not merely to label emotional states, but to recognize what it feels like to experience something” in a process called emotional attunement (p.671). Emotional attunement aims to shape a physician’s perspective on another person’s experience. A physician practicing emotional attunement (related to the third dimension of empathic practice which I will describe later) takes the perspective of the patient. However, Halpern cautions, being moved by a patient’s experience is not the same as feeling the same emotions a patient feels. A physician

who deals with terminal illness day in and day out could be very easily drained from this emotional burden if they chose to engage emotionally with every patient they encounter.

As Halpern explains, emotional attunement is central to clinical empathy. Morse et al. (1992) extend this definition, explaining that empathy operates in four dimensions. First is the moral dimension, which states that there must be an internal force that drives empathy. Second is a cognitive ability to understand and identify another's emotional state (for example, through verbal and non-verbal cues in the physical exam). Third is an emotive dimension in which the empath identifies or shares in the other person's emotional experience. Finally, the behavioral dimension governs the response to the understanding of another's perspective (an action or dialogue in the context of a clinical encounter) (Morse et al., 1992).

This thesis uses this four-dimensional approach to define empathy and empathic practice. Based on the above analysis, this thesis stipulates that an empathetic physician must possess the following competencies:

- (1) The physician must want to be empathetic for the sake of their patients (Moral dimension).
- (2) The physician must be able to perceive social, emotional, and verbal cues to understand the patient's emotional state (Cognitive dimension).
- (3) The physician must be able to take on the perspective of the patient and be emotionally attuned to the patient's experience (Emotive dimension). This is distinct from feeling the same emotions as a patient.
- (4) Based on an understanding of a patient's emotional state, a physician must be able to act in an appropriately sensitive manner (Behavioral dimension).

A physician who does not possess the above qualities can fail to provide empathic care in many ways. A physician who lacks the motivation to be empathetic might lack the motivation to act in accordance with a patient's values and beliefs. Even a well-intentioned physician who is unable to pick up on verbal and non-verbal subtleties in the patient encounter might not be able to understand how a patient is truly feeling, hindering the ability to provide empathic care. A physician who cannot be emotionally attuned to a patient's emotional experience largely practices "detached concern", a philosophy distinct from empathic practice. Finally, a physician who does not act on the insights gained from the cognitive and emotive dimensions of this definition might not be able to convey to the patient that they are practicing empathy.

In future sections, this thesis provides the way music can be used as a tool to train physicians in these four dimensions, with a primary focus on the cognitive and emotive components of this definition. While there may be individual differences in empathy as seen as a central component of personality (often dubbed "trait empathy" in the literature), I will argue that a music approach can teach students to perceive aspects of another's emotional state, take another person's perspective, and act in an emotionally-sensitive manner. These skills can be directly applied to empathic care.

Why Care About Empathy?

As mentioned previously, empathy is an often-sought physician characteristic among patients, who generally seek physicians who seem in tune to patient needs. The Medical School Objectives Project, a consortium designated by the American Association of Medical Colleges to set educational objectives for medical students stipulates that a physician "must be compassionate and empathetic in caring for patients" (The Medical School Objectives Project

Writing Group, 1999, p. 15). The widespread desire for empathetic physicians offers credence to the notion that empathy is an important component of effective medical practice.

Moreover, empirical evidence suggests that increased physician empathy can improve patient outcomes. A study conducted by Hojat et al. found that increased physician empathy (as measured by the Jefferson Scale of Empathy for Physicians) correlated with increased A1C and LDL-C control among diabetic patients, which serves as a biological indicator of disease management. (Hojat et al., 2011). Another study of 719 patients with colds found that cold symptoms resolved more quickly in clinical interactions in which the physician practiced empathy and positivity during a scripted clinical encounter. This study also found that interleukin-8 levels (a marker of infection) were significantly lower in the group that had the most empathetic practitioners (Rakel et al., 2011). Empathy has also been found to improve trust in the physician-patient relationship. For example, patients are more likely to report all of their symptoms if they feel like their doctor is invested in their well-being and fully understands their problems and concerns (Suchman, Markakis, Beckman, & Frankel, 1997). Thus, empathy is vital to providing quality patient care—a physician who fails to empathize can risk poorer patient outcomes and greater patient turnover.

The evidence presented here highlights the importance of empathy in the clinic and its role in improving patient experiences and outcomes. Empathetic care is an important part of the physician's toolkit, and the training physician can benefit from understanding and practicing empathy. A rapidly growing field of study, the medical humanities, aims to incorporate humanistic tools such as empathetic care into a medical curriculum through the study of the arts and literature. This thesis proposes that music can be used in conjunction with existing medical

humanities principles to offer physicians a novel opportunity to develop important insights that relate to empathy.

Music and the Medical Humanities

The study of the humanities in medical coursework has been used in various medical schools across the country to improve clinical skills, such as careful observation and tolerance of ambiguity (Bentwich & Gilbey, 2017; Dolev, Friedlaender, & Braverman, 2001). Similarly, programs at the Blanton Museum of Art and Dell Medical School in Austin, TX have sought to use the arts and humanities to teach clinical skills such as observation and reflective practice, according to Ray Williams, Director of Education and Academic Affairs at the Blanton Museum of Art (Williams, R. Personal communication, April 9, 2018.)

Several studies have shown that medical humanities coursework can improve physician empathy levels, which typically decline starting in the third year of medical training, when training physicians first begin clinical rotations (Hojat et al., 2009). For example, Graham and colleagues (2016) measured empathy levels by administering the Jefferson Scale for Physician Empathy (JSE), a Likert-scale questionnaire, at the beginning and end of the academic year. The group found that students who took a medical humanities course were more likely to have increased their empathy score by the end of the year (14/25 in the medical humanities group vs. 12/43 in the control group) (Graham et al., 2016). While these results show promise, other studies have reached conflicting conclusions, and some studies have even seen declines in empathy after arts interventions in some populations. One study found qualitative evidence to suggest that an art-making workshop allowed physicians to reflect and gain increased empathetic understanding, despite an apparent decrease in JSE score (Potash, Chen, Lam, & Chau, 2014). Another group found that a visual arts program failed to create a statistically significant

difference in JSE scores measured before and after the program (Yang & Yang, 2013). The conflicting evidence presented here highlights the difficulty in quantifying the effects of empathy education interventions, signaling the need for more research in this area.

Although there are very few studies that directly explore the effects of the humanities on empathy education, there are even fewer studies that have explored the role of music specifically. Qualitative evidence from these studies offer credence to the notion that music could be useful in empathy education programs. Janaudis and colleagues assert that formalized reflection session during a clerkship centered around listening to music offered students in Brazil an opportunity to reflect on their careers, their relationships with others, and their attitudes as physicians. As part of this seminar series, students listened to various songs (by artists such as Elvis Presley, Metallica, and others) centered around issues that the students then discussed. This was an opportunity for students to practice the emotive dimension of empathy (by taking the singer's perspective) in a setting where they could discuss with their peers. The authors found that this approach allowed them to engage with complex issues that were presented in a distilled form as popular songs (Janaudis, Fleming, & González Blasco, 2013). A similar series led by Newell and Hanes at Cooper University Medical Center used musical selections to spark discussions on a variety of issues, such as physician perception, how doctors learn, and social issues in medicine. Music about topics such as AIDS and politics were used to introduce the artists' ideas on the topic and generated a discussion on how these issues and ideas could relate to medicine. More than half of the 17 participants believed at the end of the seminar that it helped them learn to be a more humanistic physician (Newell & Hanes, 2003). A study conducted in Ankara, Turkey also found that medical students with musical backgrounds had higher overall empathy levels (as assessed by the Dokmen Empathy Scale) when compared to their classmates (Pirgon, 2015).

While this study was not causative, the findings suggest that music might instill qualities that lend well to empathy.

The Neuroscience of Music and Empathy

In addition to preliminary evidence that suggests music-based interventions have potential as empathy education tools, findings in the field of neuroscience and social psychology also seem to suggest that music could play an active role in empathy. Research in the neurosciences is greatly improving our understanding of the complicated nature of human relationships at the neurological level. There is strong evidence that music is related to pathways that mediate empathy and social relationships; this evidence provides a scientific basis for exploring the applications of music in the study and development of empathy.

In the realm of social psychology, music has been implicated in the creation of positive social relationships. Synchronous activity involved in music-making (for example, playing in the same tempo or playing rhythms at the same time) has been shown to lead to positive feelings toward other members of the group that are engaging in music making via the neurohormone oxytocin (Freeman, 1998). Furthermore, active involvement in musical activities such as dancing vigorously or singing with intensity lead to activation of the endogenous opioid system, which in turn leads a decrease in pain and an increase in “affiliative sentiments and behaviors” (Tarr, Launay, & Dunbar, 2014, p. 5). One study found that even passive listening to music of different cultures increased the implicit feelings of affiliation between members of different cultures. Participants in this study who listened to music from a West African culture, for example, felt more affiliation to people from this part of the world. This effect was more pronounced in people who had higher inherent empathy levels as measured by the Interpersonal Reactivity Index, a

measure of emotional resonance and perspective-taking qualities (Vuoskoski, Clarke, & Denora, 2017). Pearce and colleagues found that participants in an adult-education singing class formed social bonds (as measured on a Likert scale) much faster than participants in a creative writing or crafts class, although the extent of social bonding was similar between the three groups after several weeks (Pearce, Launay, & Dunbar, 2015). This result provides evidence that engaging in musical activity can engage neural pathways that foster positive social relationships more readily than other art forms.

Recent research in neuroimaging have pinpointed several brain regions that are implicated in empathy. Perhaps the most well-known of these regions is the mirror neuron system, which has been shown in fMRI studies (along with the insula, another brain region that mediates emotion) to be involved in empathy and imitation of emotion (Carr, Lacoboni, Dubeau, Mazziotta, & Lenzi, 2013). Little research has been done on the effect of music specifically on these brain regions, but a neuroimaging study that finds brain activation in these regions when listening to music could further implicate music with empathetic feelings.

One of the major limitations of this evidence is the absence of factors that imply causation. As of date, very few studies have been able to show a causal link between engaging in music and empathetic understanding. Further research in this field needs to be done by measuring brain activation in the previously mentioned regions in the passive consumption of music and the active participation in musical activities. These findings provide good evidence that music could be a tool used to foster empathy and social relationships at a physiological level. The next two sections describe the ways music can be utilized to combat the decline in empathy, as well as teach other valuable skills that are related to providing meaningful, human-centered care.

The Case for Listening to Music

Beyond theoretical neurological and psychosocial implications, listening to music has already been applied to teach a variety of important clinical skills, which have relevant connections to communicating effectively, engaging with the human experience of illness, and coping with complexity and ambiguity. These are vital components of the cognitive and behavioral aspects of empathic practice that are described previously.

The Importance of Listening in Clinical Context

Listening is considered a vital feature of clinical practice, and it has been shown to improve clinical outcomes and patient satisfaction. A study consisting of structured interviews of 58 patients with various illnesses conducted by Jagosh and colleagues at McGill university reinforced the idea that physicians who demonstrate good listening skills are better able to act in accordance with a patient's values. The study concluded that listening served three important roles: to enable physicians to make better diagnoses, to create and sustain good physician-patient relationships, and to act as an instrument for healing (Jagosh, Donald Boudreau, Steinert, MacDonald, & Ingram, 2011).

To further expand on the role of listening in humanistic care, psychotherapists Samuel Graybar and Leah Leonard succinctly describe how central listening is to the human experience:

Ideally as clinicians, listening is at the core of who we are and at the center of what we do....It is hard to imagine an intimate, close, or curative relationship where listening does not occur, or where one does not feel seen through the process of being heard. The need to be listened to is never outgrown. Being listened to allows us to be understood in all our

complexity. It allows our experiences to count and ourselves to matter. Being listened to is not an optional experience (Graybar & Leonard, 2005, p. 3).

As Graybar and Leonard state, listening is fundamental to the human experience and should be a priority for physicians. Listening is essential in developing close, trusting relationships with patients and therefore must be a central component in a curriculum that emphasizes humanity. Listening, according to them, is part of a patient's identity; thus, lack of active listening could dehumanize them.

William Osler, one of the pioneers of humanistic medicine, is often attributed to have advised his students to “listen to [their] patients, for [they] are telling you the diagnosis” (as cited by Ovens, 2019). Even in the today's clinic, this is relevant—EKGs, X-rays, and MRIs can reveal technical issues, but the patient narrative can guide the physician to the correct diagnosis. Thus, listening is vital to serving patients, and music has been shown to be an effective parallel in which to practice this important skill.

Learning to Listen Closely with Music

As patients and human beings, we want to be listened to. We want our physicians to listen to our stories, and perhaps pick up on things we do not express verbally—our uncertainties in the face of an illness we do not understand or the tiredness we feel after struggling with the side effects of a new medication, for example. An astute physician can pick up on these aspects and make more empathetic decisions, analyzing multiple verbal and non-verbal cues to understand how a patient is truly feeling.

Music has been used as a tool to train physicians to listen beyond the words, practicing what Peter van Roessel and Audrey Shafer of the Stanford University School of Medicine term the “art of listening” (Roessel & Shafer, 2006). Van Roessel and Shafer explain that music can

serve as metaphor for patient-physician communication, using a recent seminar led by Robert Kapilow and the St. Lawrence String Quartet (SLSQ) as a model for how music can teach physicians to listen beyond the words. Van Roessel and Shafer describe the benefits of comparing music to the patient narrative:

By encouraging listeners to consider pitch, rhythm, attack, voicing, repetition, color, and direction in music, we are encouraged to consider these qualities in voice and affect of our patients. Music, both harmonic and discordant, reflects the interplay of multiple voices, and much of the value of Kapilow and the SLSQ's demonstration comes from isolating instrumental voices individually, then showing the way in which these voices interact and complement each other. Understanding this, we are encouraged to listen and attend broadly to the multiple streams of information that may come from our patients: for example a patient's words, behavior, appearance, medical history, and interactions with family all convey relevant and actionable information to an astute practitioner. (van Roessel & Shafer 2006, pgs. 6-7)

The primary benefit of a string quartet workshop like this is the opportunity to look at multiple aspects of a piece of music (with some training) and apply this concept to the patient narrative. The attentive and empathetic physician can pick apart subtle musical elements after a single listening; similarly, they can identify subtle changes in a patient narrative after having only met the patient once and use those insights to provide more meaningful care, in accordance with the cognitive and behavioral components of empathy as defined previously. For example, a physician can detect a patient's uncertainty with changing medications or sense the tiredness of patient's caregiver and can take actions such as referring the caregiver to a therapist.

The ability to perceive and act upon extraverbal aspects of a patient narrative is especially important because, as Shannon (2011) points out, the patient narrative is co-constructed. Patients typically do not rehearse detailed narratives and can often provide imprecise or incomplete information. Similarly, a physician constantly filters information and decides in real time what information to write down or include in the patient note. Thus, the narrative is incomplete without both roles playing an equal part (Shannon, 2011).

Furthermore, understanding and engaging in a patient's narrative empowers a physician to practice empathy, reflection, professionalism and trust, according to Dr. Rita Charon, who currently serves as the director for the Program in Narrative Medicine at the Columbia College of Physicians and Surgeons. In this Columbia program, narrative exercises such as close reading, the practice of reading a text closely to reveal inner meanings and subtleties, serve to improve the quality of a physician's perceptive attention, a prerequisite for providing empathetic care (Charon, 2001).

But why must the arts be used to teach physicians to listen closely? In an academic center that serves thousands of patients each day, physicians-in-training might be tempted to practice close listening by simply seeing more patients. There is no doubt great value in practicing listening to real people, but one of the most unique facets of the art is the ability to practice these skills in an abstract way, allowing for the application of this skill around multiple contexts. Just as climbing the same wall over and over hardly produces the superior climber, seeing patients day in and day out hardly gives a chance for reflection on empathetic practices. The arts serve as an important tool because they allow the training physician to build empathetic practices in a non-clinical context and apply them to a variety of scenarios.

Furthermore, listening to instrumental music can offer the advantage of being inherently non-verbal. A training physician is forced to listen exclusively to factors such as pitch, volume, rhythm, and silence without using words as a crutch. When listening to, say, a string quartet, a listener is compelled to interpret these non-verbal aspects, push them into a coherent whole, and extract meaning from that whole—all in real time.

One of the most essential aspects of experiencing music is listening to its various components, verbal and non-verbal. This allows music to be a powerful tool in teaching physicians how to listen to what a patient says, and more importantly, what a patient does not. This skill allows practitioners to add another dimension of empathy to their practice, and in turn, allows them to do much more for their patients. While this is a challenging skill to learn with all the pressures that training physicians might face, it is one that can go a long way in serving a patient's needs.

Listening to Music and Engaging with the Illness Experience

“The price for a technologically sophisticated medicine seems to be impersonal, calculating treatment from revolving sets of specialists who, because they are consumed with the scientific elements in health care, seem divided from the ordinary human experiences that surround pain, suffering, and dying.”

-Rita Charon (qtd.in Shannon 2011, p. 114)

Charon laments that today's sophisticated medicine has distanced itself from the human experience, and recent artistic approaches have sought to bring back the conversation of illness back into the medical school curriculum. A recent program spurred by a collaboration between Austin's Dell Medical School and the Blanton Museum of Art serves as a shining example of this—physicians are brought to the art museum to spend hours viewing art and picking apart

complex elements as they relate to the life and illness experience (Williams, R. Personal communication. April 9, 2018). Physician participants have the informative opportunity to take a step back from their medical practice and explore the human condition, reminding them what it means to be ill or broken or hurt.

The musical world offers a wealth of opportunities for training physicians to reflect on illness. Many composers wrote masterworks in the face of illness, no doubt reflecting on their lives in the process. The third movement of Beethoven's Op. 132 string quartet, for example, was written as a song of thanks after he survived a life-threatening episode intestinal inflammation. Further, Beethoven's 9th symphony was composed by Beethoven as he suffered from total deafness; interestingly, ninth symphonies are often written with the awareness that it would be the composer's last (van Roessel & Shafer, 2006).

A listening session of these works could be a powerful way to remind training physicians that they are treating actual human beings, who have wants, needs, uncertainties and desires. A small group of students could listen to a work such as the final movement of Tchaikovsky's "Pathetique Symphony" and piece apart the complexity of emotions that result. A discussion of participants' various interpretations could evolve into a general discussion on the expression of emotion when faced with illness or death. The engagement with and analysis of the listening can provide an opportunity for students to discuss the abstractions that related to complex illness, thus adding a component of reflection.

In the often fast-paced life of a physician, there are few opportunities to reflect on the nature of illness. A listening section once a month or even once a year could remind physicians to reflect on these experiences. A doctor who can reflect on illness can naturally be a better and more compassionate guide for a patient dealing with complex illness.

Engaging with Ambiguity through Music

Medical students spend much of their education memorizing and learning facts about human body systems. Students learn about diagnoses with absolute certainty, and this perspective undergoes a dramatic shift when students begin seeing patients in the clinic. In the clinic, a physician is forced to act on ambiguous and incomplete information from a patient history, act with empathy, investigate possible diagnoses, and treat an often ill-defined problem. Studies have found that dealing with ambiguity is often a source of stress for a junior physician (Bovier & Perneger, 2007), and this added stress could place strain on a physician's relationships with patients.

Listening to a musical work can be used to teach students about the nature of ambiguity. As with the visual arts, there is no one correct interpretation of a musical work, and this fact can be used to start conversations on the nature of complexity (Lake, Jackson, & Hardman, 2015; Newell & Hanes, 2003). A lesson on ambiguity through the musical lens can be designed by drawing parallels to the visual arts. The visual arts employ an education philosophy known as "Visual Thinking Strategies" that aims to "encourage learners to look carefully, verbalize their observations, and interact with others regarding their interpretations of the images" (Bentwich & Gilbey, 2017, p. 1). Bentwich and Gilbey show that this approach is effective in encouraging students to accept multiple possible meanings, as 30 out of the 45 students (67%) thought that the discussion contributed to their ability to accept multiple meanings. Similarly, there is no one correct interpretation of a musical work, so the use of music can provide an avenue to approach an auditory version of "visual thinking strategies". Discussion around alternate interpretations is an essential component to the success of this effort, according to Bentwich and Gilbey.

“Threnody to the Victims of Hiroshima” by Krystof Penderecki, a piece that is personally meaningful to me, is a good example of music’s ability to evoke discussion on ambiguity. This post-modern composition for 52 individual string players pays homage to the victims of the Hiroshima, and deviates greatly from musical convention, experimenting with dense and dissonant sounds. The piece lacks easily identifiable musical events and constantly evolves in an unpredictable manner (Kozak, 2016). Due to the nature of the subject matter, and the atonal, ambiguous nature of the piece, “Threnody” can create an emotionally raw experience that is rich with multiple meanings. In a discussion setting, listeners can be asked exactly what kinds of emotions are brought up by sections of the piece, and what aspects of the piece relate to the horrific bombings that occurred during World War II. This could lead to further discussion on the nature of human suffering, and how suffering is abstractly depicted in Penderecki’s composition.

In summary, music can be used as a tool to teach physicians to cope with the challenges of ambiguity in the clinic. An appreciation for ambiguity can help a physician better understand the complexity of a patient’s diagnosis, allowing for a stronger, more empathic relationship between the two. The experienced physician is not exasperated by a complex and ambiguous diagnosis and is better equipped to take stock of a patient’s experience to find the best treatment approach.

The Case for Making Music

A quick look into the history of modern society reveals that music was a key development in maintaining social connections. Even today, teenagers across the world drag their friends to musical concerts and church groups join each other in singing religious tunes,

forming meaningful connections in their social circles. As reviewed previously in this thesis, neuroscientific evidence points to music as a possible way to improve social bonds between people. Synchronous activity between people (in the form of singing or playing together) has been shown to lead to positive perceptions of another person, for example (Tarr et al., 2014). In the clinic, the positive interactions brought by music can help foster meaningful connections between the patient and the physician.

A study conducted in Ankara, Turkey found that physicians who had extensive musical training had higher levels of empathy than their non-musical counterparts (Pirgon, 2015), offering credence to the idea that musical performance could contribute to the practice of empathy. Even without extensive training, performing music can encourage synchrony, teamwork, and communication among physicians and patients and offer a valuable shift in pedagogical focus that could change the discussion on empathy development in medical school.

Teaching Synchrony, Teamwork, and Communication

In her book detailing her journey as part of the Longwood Medical Orchestra, a community orchestra comprised of physicians who perform musical masterworks in Boston centers for healing, Lisa Wong, MD describes the ineffable force that compels physicians to play music with each other. The experience, she says, is healing, and offers an opportunity for physicians and medical students from all backgrounds to come together to make music (Wong, 2012).

As is the case in most orchestras, physician-led or otherwise, players from all walks of life come together to make music. Playing in an orchestra requires awareness of the self and others, forcing sixty or more members to feel the same pulse of a piece of music. Playing music

requires teamwork: an old orchestral adage says that even one string player playing too loud in a very soft section could throw the balance of the entire group. Playing music requires communication beyond words, as can be observed by the swaying movements of the players in the orchestra, showing each other where the music is.

The study of music performance, or even the simple act of making music with others can train physicians to communicate with each other in a novel way. Performance in a larger ensemble necessitates synchrony and communication between players, which is a skill that can be easily applied to medicine, in which many physicians communicate and coordinate care (Haidet, 2007).

An empathetic physician is not only one who can communicate with other providers, but one who can achieve synchrony with a patient. Empathetic doctors do not entirely lead the conversations with patients, because one-sided conversations prevent the whole story from being told. Instead, an effective physician must supply words when necessary and constantly adapt their communication style to fit the needs of the situation. Music teaches these skills in an abstract way, empowering physicians to be better communicators through performance (Haidet, 2007).

For example, music can teach a physician when to share the spotlight and when to support another player, the patient. In the jazz tradition or even in a standard garage band jam session, the drums player must recognize when to take the solo and when to play the supporting line for another soloist. Similarly, an astute physician must learn when to take the lead in a patient conversation and when to support a patient as they are explaining their clinical history. By no means is this a subtle difference—most of us have had physicians who simply did not let us talk or jumped in at the wrong time to deliver clinical “advice”.

Music as a Shift in Pedagogical Focus

As detailed previously in this thesis, music offers an opportunity to learn skills from a different point of view. Music can be used to teach a physician how to listen closely outside of standard clinical interactions. This change of pace can be valuable for physicians, allowing them to reframe the way they approach learning clinical skills.

An analysis of qualitative data by Watling et al. (2013) found several contrasts between the curriculum of music and medical students. In medicine, learning primarily occurs through performance of medical procedures, while in music, learning occurs during individual practice time. Medical students strive to be competent at performing tasks, but music students strive for perfection in performance, and view mere competence in a negative light. Medicine values independence in learning, while music values mentorship. In a music lesson, learning is facilitated by careful instruction; in medicine, learning comes best from observing "virtuosity" (e.g. learning how to do surgical procedures by watching the attending) (Watling, Driessen, van der Vleuten, Vanstone, & Lingard, 2013).

Exposure to some sort of music performance training can shift the pedagogical focus away from competence to refinement, a concept which is especially relevant to the cognitive and emotive dimensions of empathy as defined previously. The educational focus on competence in the clinic is justifiable. For example, the way a physician intubates a patient does not change drastically in different scenarios; therefore, the establishment of competency is of utmost priority, followed by refinement. In the practice of empathy, however, action is dictated by the situation. A comment or question in one interaction is not necessarily appropriate for another, and mere competence is not enough to address this subtlety.

A musical approach can also encourage attending physicians to play a more advisory role for a training physician who is just starting to learn empathic practices. The benefit of considering music in this way is that senior physicians are reminded of their role as mentors. As Watling et al. found in their comparison, the most accomplished music teachers are those who provide steady mentorship, not those who are the most skilled in their craft (Watling et al., 2013). Doctors can benefit from exposure to this pedagogical focus and the evaluation of doctors by their mentorship abilities rather than their virtuosity in patient care.

Dealing with the “butter notes”

In one of his piano lessons, the legendary jazz trumpeter Miles Davis urged his students: “don’t play the butter notes”. In one interpretation of this phrase, Miles Davis referred to the “butter notes” as those that most typically would be played in a jazz improvisation solo. Bradner et al. interpret this as an insight into performing improvisation and reacting to what happens during an improvisation solo (Bradner, Harper, Ryan, & Vanderbilt, 2016).

To provide background, the jazz tradition often involves extended solos that are composed on the spot by the musicians in the band. While that player takes the solo, the others work to create a salient accompaniment. Miles Davis encouraged jazz artists to stray away from playing the safe notes, and when players played notes that strayed from convention, the audience was more receptive. Similarly, Bradner and colleagues (2016) argue that medical students should draw lessons from the jazz improvisation tradition. They argue that participating in improvisation helps students react more positively to mistakes and “not judge the unexpected”, seeing mistakes as an opportunity to refine skills rather than a cursed state to avoid at all costs. In the practice of empathy, predictable conversation is rare. An astute and empathetic physician must be able to navigate unexpected moments in a patient conversation, dealing with the “butter

notes” as they come. Music offers an opportunity to practice these skills outside of the clinical context.

The primary benefit of performing music as a medical trainee is to serve as a powerful analogy for clinical skills and shift away from the pedagogical focuses that might undermine the framework for empathy development. As mentioned previously, the ability to practice empathy in a non-clinical setting is valuable because it provides an opportunity for students to learn these skills and apply them to a variety of situations.

In this thesis, various potential applications for music in an empathy education curriculum have been explored. While music shows great promise, much research still needs to be done to determine optimal methods of designing and evaluating these methods. In the next section, I will present the arguments that challenge the value or complicate the implementation of empathy education programs and argue why empathy education through music still has great value despite these issues.

Addressing Limitations

In scholarly discussions on empathy education, there remain a variety of unanswered questions and topics that warrant further research. First, scholars disagree on how best to define and measure empathy. Current research in neuroscience and psychology are only beginning to determine the manifestations of empathy in the brain and in behavior. Thus, it is often difficult to apply rigorous analyses to determine the effectiveness of empathy education programs. Second, scholars disagree on the role of empathy in clinical care. While some view empathy as a central competency, others view that empathy might hinder a physician’s ability to provide effective

patient care. In this section, I address current disagreements in studying empathy education and argue that empathy education is still worth considering despite various gaps in knowledge.

A Slippery Definition of Empathy

One of the most prevalent criticisms of studying empathy in the clinic is the lack of its operationalization. An operationalized definition of empathy would restrict the definition of empathy to factors that are strictly measurable. A systematic literature review on studies that measured empathy found that only 14 out of 109 studies used a definition of empathy that was operationalized (Sulzer, Feinstein, & Wendland, 2016). This finding indicates that much still needs to be done to ensure that studies of empathy pass the tests of scientific rigor.

Other studies measure empathy via the administration of questionnaires to patients and physicians. The most widely-used instrument of this type is the Jefferson Scale for Physician Empathy (JSE), which uses a Likert scale to measure agreement with a series of statements relating to empathy, some of which appear below (Hojat et al., 2018):

- Attentiveness to my patients' personal experiences does not influence treatment outcomes
- Empathy is a therapeutic skill without which success in treatment is limited
- It is difficult for me to view things from my patients' perspectives

In correlational studies, scores denoting higher empathy on the JSE were correlated with other personality measures, such as Sociability and Perspective-Taking. Further, the JSE was found to be positively associated with preference for more people-centered medical specialties, measures of clinical competence, and patient outcomes (Hojat et al., 2018).

Despite these associations, the Jefferson Scale for Physician Empathy is an instrument that is susceptible to biases, such as the social desirability bias. To be seen favorably by faculty members, students might respond in a way that is inconsistent with their own personal beliefs, thus detracting from the validity of the measure. In order to correct for this, Hojat et al concurrently administered the “Infrequency” scale of the Zuckerman-Kuhlman Personality Questionnaire, which is designed to correct for social desirability (Hojat et al., 2018).

Even with these carefully constructed corrections in place, this measure could still represent the levels of empathy in a training position. A student could espouse the values of empathy but might find themselves unable to practice these skills in the clinic. Thus, a more operationalized definition could be of immense value in measuring empathy in patient care. For example, an eye-tracking apparatus could measure the number of times a physician looks at the patient during an exam. A recording of the interaction could capture the amount of time the physician pauses after listening to what a patient says, providing evidence that the physician is truly considering a person’s argument. Perhaps activation of the brain’s empathy pathway could signal empathic practice as well. While any single measurement could not fully capture empathic practices, the combination of multiple subjective and objective measures could provide insight into the mindset of the training physician.

As with any medical curriculum approach, empathy education must be evaluated to determine the effects and value of such a program. As expected, science classes and clinical education are considered important aspects of a physician’s training, and the usefulness of an empathy curriculum must be constantly evaluated. The current standard is often to ask students about the value they gained from this kind of education. In this frame of reference, several music

in medicine seminars have been deemed academically valid or useful by students who participated, as described previously in this thesis (Janaudis et al., 2013; Newell & Hanes, 2003).

A literature review of 13 papers on arts-based interventions conducted by Perry and others (2011) found that while there are studies that offering promising evidence that arts-based interventions could improve empathy, the scientific rigor and methodology of these studies is a serious threat to their validity. While many studies claim that arts-based programs are successful, many fail to provide adequate control groups or only provide student evaluation of the programs as a justification for their usefulness (Perry, Maffulli, Willson, & Morrissey, 2011). The authors of this review argue that these interventions must be translated into better behavior, whether it is sensitivity to patient needs or performance in a standardized clinical exam in order to gain validity. In response to this criticism, Lake et al (2015) argue that scientific rigor should not be the bottom line when evaluating these programs. One must not discount the value of the perspectives that are gained through these interventions.

The difficulty in measuring empathy and its outcomes, however, is not grounds for ignoring its importance to clinical practice. The qualitative evidence gathered from the student experience, which indicates that these programs are still effective, is still largely valuable. Further, there is still a great need for physician empathy, as shown by patient narratives and clinical statistics. Thus, medical schools must still find methods to cultivate and encourage the practice of empathy among student trainees. In the coming years, neuroscience research will undoubtedly uncover the mechanisms that underlie empathy, but until then, the practice of empathy remains a central component of a positive patient experience.

Could Empathy Be Detrimental?

While evidence described previously in this thesis indicate that empathy on the part of the physician could lead to better clinical outcomes, several scholars warn that empathy could be potentially detrimental to providing care. Haque and Waytz (2012) describe the role of dehumanizing practices, such as a lack of empathetic care, in present-day healthcare institutions as a possible defense mechanism for physicians. According to Haque and Waytz, dehumanization “likely also results from physicians’ need to suspend themselves temporarily from their role in committing harm, a process related to empathy reduction” (p.179). Furthermore, they argue that humanizing patience can lead to increased stress, which causes undue burden on a training physician.

In addition to contributing to physician distress, empathy could cloud decision-making. In a famous opinion piece in the New Yorker, Yale psychologist Paul Bloom offers evidence that the empathic solution is not always the best one. As an example, Bloom cites the kidnapping of Natalee Holloway in 2005, a tragedy that coincided with a massive genocide in the Darfur region. The former tragedy received far more media attention, due to phenomenon called the “identifiable victim effect”, which caused viewers to empathize more with Holloway’s predicament than with the killing of nameless individuals in a distant region of the world (Bloom, 2013). In the clinic, the “identifiable victim effect” could similarly cloud a physician’s judgement. For example, a physician who identifies strongly with a patient might devote limited time and resources to that patient over other patients in the hospital.

There are undoubtedly situations in which empathy can be debilitating or inappropriate, and this is a concept that should be addressed by an empathy education curriculum. Many physicians who designed arts-based empathy education discuss the importance of tying the

overall lesson back to medicine (Janaudis et al., 2013; Newell & Hanes, 2003). A discussion on the relevance of empathy in the clinic should include information on when empathy is appropriate and inappropriate.

Can Empathy Be Taught?

Empathy is often seen as an emotional quality that varies significantly among people. Opponents of empathy education programs might highlight the impossibility of teaching someone to emote, to feel the “correct” level of sadness when helping a patient working through grief, for instance. In response to this argument, Halpern argues that while emotions can contribute to empathy in the clinic, “[emotionally] attuning to patients does not always involve resonating with strong feelings, but often is a subtle nonverbal sense of where another person is emotionally” (pg.671). According to Halpern, empathy in the clinic can occur without emotional involvement, but rather a subtle understanding of what it is like to feel another’s emotion. For example, a physician who is treating a terminal cancer need not feel the same fear of death the patient is likely experiencing (i.e. they need not emotionally resonate with the patient); instead, the physician can still be empathetic by understanding what it is like to be fearful of passing away.

Halpern’s argument that emotion is not the sole component of empathy is also reflected in the multi-dimensional definition of empathy that I previously presented. The act of feeling another person’s emotions falls largely under the “emotive” dimension of empathy, which Halpern argues can operate counterproductively if done in excess (i.e., a physician overwhelmed by emotion is unlikely to be productive). As I have shown, music can help nurture empathy by focusing on aspects of empathy that have been shown to develop, such as perception (van

Roessel & Shafer, 2006), perspective-taking (Janaudis et al., 2013; Newell & Hanes, 2003), and action.

Much research still needs to be carried out to determine whether empathy is in fact a learnable skill. But in the meantime, the focus of empathy education should be on empathic *practice*. Evaluators of clinical performance are concerned with the patient experience rather than with the exact combination of emotions a physician feels during the patient interaction. Despite the possibility that the level of emotional resonance might be innate and immutable, other dimensions of empathy could be developed by empathy education intervention. As discussed in this thesis, music can help build the cognitive and behavioral dimensions in several ways, empowering physicians to practice medicine with greater empathy.

Conclusion

In this thesis, I have shown that music has potential as an approach to nurturing empathy in medical training and have outlined the neuroscientific evidence that supports music's relationship with social bonding and empathetic understanding. Listening to and performing music can nurture many skills which are vital to the development of an effective, empathetic physician. While much research needs to be carried out to determine the exact ways to implement and measure the success of a music program centered on empathy, qualitative evidence suggests that physicians largely find this training meaningful and can benefit from insights gained from these music programs.

More significantly, empathy education is an important concept because it is an important trait for physicians who navigate a rapidly changing medical landscape. As chronic conditions such as obesity and heart disease increasingly become a cause of illness, a physician's role will

become increasingly longitudinal. As many technical advances outperform and replace diagnosticians, patients will often look to healthcare workers for emotional and spiritual support. To prepare for these rapid transformations, medical education must begin adapting curricula now to train physicians for the changing healthcare challenges that lie ahead.

Despite these changes, healthcare remains inherently human. As patients and as people, we look to physicians and other healthcare professionals to listen to what we have to say, cure our illnesses, and give us hope. Thus, empathy and humanity will always be an important physician competency. Although much research needs to be done to determine what effective empathy interventions could look like, music and the arts could serve as a powerful reminder that we are humans before we are physicians, students, or patients.

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